

Work Order ID 77680

December-16-11 11:11:12 AM

77680

Page 1

Item ID: D2580-1

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: 205 Skidtube bent detail

Start Date: 16/12/2011 Start Qty: 2.00

2

Cust Item ID:

Required Date: 20/12/2011 Req'd Qty: 2.00

2

Customer:

Reference:

Approvals:

Process Plan: M.L.J

Date: 11/12/11

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start ***NR1***

Stop ***NR2***

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| Draw Nbr | Revision Nbr | | | | | | | | |
| D2580 | E | | | | | | | | |

100

0.00

100

Skidtubes

Skidtubes

Memo

0.00

1- Inspect mat'l D2500-1-190 for damage.

2-Drill pilot holes using drill jig DT 8149 (Do not use cutting fluid)

3-Open holes to 0.500" as per Dwg D2580 without cutting fluid

4-Deburr holes per QSI002 section 4.2.3 and blow out all chips from inside of tube

5- Chemical Conversion Coat as per QSI 005 4.1

6-Bond web in place per QSI 015.

A/R Sikaflex-291 batch: M119808

Sikaflex expire date: 2012/03/08 2012/08/13 @

Start time and date: 14:00 bond for 12hrs

②

ⓧ

12-1-2

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

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Page 2

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: 205 Skidtube bent detail

Start Date: 16/12/2011 Start Qty: 2.00

2

Cust Item ID:

Required Date: 20/12/2011 Req'd Qty: 2.00

2

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

101

QC6- Inspect dimensions to drawing

0.00

101

QC

Memo

0.00

Quality Control

DP 12-1-3

130

QC3- Inspect Part Finish

0.00

130

QC

Memo

0.00

Quality Control

DP 12-1-3

140

Identify as per dwg & Stock Location: 4/6

0.00

140

Packaging

Memo

0.00

Packaging

DP 12-1-3

| W/O: | | WORK ORDER CHANGES | | | | | |
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NOTE: Date & initial all entries

Work Order ID 77680***77680***

Page 3

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: 205 Skidtube bent detail

Start Date: 16/12/2011 Start Qty: 2.00

2

Cust Item ID:

Required Date: 20/12/2011 Req'd Qty: 2.00

2

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

150

QC21- Final Inspection - Work Order Release

0.00

150

QC

Memo

0.00

Quality Control

CK 12/01/03

mf 12-01-03

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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NOTE: Date & initial all entries

Picklist Print

December-16-11 11:11:18 AM

Page 1

Work Order ID: 77680

77680

Parent Item: D2580-1

D2580-1

Parent Item Name: 205 Skidtube bent detail

Start Date: 16/12/2011

Required Date: 20/12/2011

Start Qty: 2.00

Required Qty: 2.00

Comments: IPP B01.11.08 Revised Step 9, 10, 12, and 13 SM IPP Rev:C
10.12.01 as per DEO D1 DD verf:ec

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Qty per Kit | Total Qty | Qty Issued | Date Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|

D2500-1-190

Manufactured

No

100

Each

85.0000

1

2

D2500-1-190

Ext'n - 'I' Beam Tube 4"

**

Location

Loc Qty

Loc Code

HALL

81

74777

81

LG

4

66296

4

D2596

Manufactured

No

100

Each

0.0000

1

2

D2596

Web, 205 Skidtube

**

78125

(2)

DP/12-1-3

12-1-2

| W/O: | | WORK ORDER CHANGES | | | | | |
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NOTE: Date & initial all entries

| LIST OF MATERIALS | | | | | |
|-------------------|-------------|-------------|-------------|---|---------------------|
| ITEM | QTY -041 | QTY -045 | QTY -047 | PART NUMBER | DESCRIPTION |
| 1 | X | | | D2580-041 | SKIDTUBE ASSEMBLY |
| 2 | | X | | D2580-045 | SKIDTUBE ASSEMBLY |
| 3 | | | X | D2580-047 | SKIDTUBE ASSEMBLY |
| 4 | 1 | 1 | 1 | D2500-1-190 | EXTRUSION |
| 5 | | | 16 | D2570 | BUSHING |
| 6 | 1 | 1 | 1 | D2576-3 | STEP |
| 7 | 20 | 24 | 25 | D2579 | SPACER |
| 8 | 16 | 16 | 8 | D2594-1 | PLUG |
| 9 | 16 | 16 | 8 | D2594-3 | O-RING |
| 10 | 1 | 1 | 1 | D2596 | 205 WEB |
| 11 | 1 | 1 | 1 | D2855 | AFT CAP |
| 12 | 1 | 1 | | D3564-5 | WEARSHOE |
| 13 | 1 | 1 | | D3564-9 | WEARSHOE |
| 14 | 1 | 1 | | D3564-11 | WEARSHOE |
| 15 | 1 | 1 | | D3564-13 | WEARSHOE |
| 16 | 2 | 2 | | D3566-1 | GASKET |
| 17 | 1 | 1 | | D3566-5 | GASKET |
| 18 | 1 | 1 | | D3566-13 | GASKET |
| 19 | | | 1 | D4406-041 | WEARPLATE ASSEMBLY |
| 20 | | | 1 | D4406-043 | WEARPLATE ASSEMBLY |
| 21 | 50 | 50 | | ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130 | INSERT |
| 22 | 50 | 50 | | AN3C4A | BOLT |
| 23 | 2 | 2 | 2 | AN3-5A | BOLT |
| 24 | | | 8 | AN4-45A | BOLT |
| 25 | 50 | 50 | | NAS1149C0332R | WASHER (AN960C10L) |
| 26 | 2 | 2 | 2 | NAS1149D0332J | WASHER (AN960JD10L) |
| 27 | | | 8 | MS21042-4 | NUT (OR MS21042L4) |

GENERAL NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ASSEMBLY (-041/-047) GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
POWDER COAT ASSEMBLY (-045) GREEN SANDEX (REF 4.3.5.8) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4.
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: D2580-041 = 34.5 lbs
D2580-045 = 34.5 lbs
D2580-047 = 37.7 lbs
- 8) WELDING PER DART QSI 004.
- 9) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 10) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 11) USE DART DRILL TEMPLATE DT8217 & DT8937 ONLY FOR D2580-041/-045 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTIONS B-B AND F-F (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND NAS1149C0332R WASHERS WITH SIKAFLEX-241/-291.
- 12) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES FOR D2580-041/-045 AND 8 PLACES FOR D2580-047)
- 13) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

SHO COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT

WITHOUT NOTICE
WORK ORDER

NO 776804.65
11/12/16

DEO ATTACHED

RELEASED

2011-08-29

| | | | |
|------------|---|--|--------------|
| E | ADD D2580-047 (ZN C4-7) AND D2580-7 (ZN B3-8); INCLUDED DEO D2580-D-1; REFORMATTED DRAWING TO CURRENT STANDARDS; DT8217 & DT8937 WAS TD2577-205 (ZN C4-1) | RF | 11.06.21 |
| D | CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183 | PH | 07.04.05 |
| C | REDRAWN, INCLUDED DEO 9094/ 9097 | CP | 98.08.26 |
| B | AS MANUFACTURED | DS | 96.12.02 |
| A | NEW ISSUE | DS | 96.09.16 |
| REV. | DESCRIPTION | BY | DATE |
| DESIGN | # | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| DRAWN | RF | | |
| CHECKED | 140 | DRAWING NO. | REV. E |
| MFG. APPR. | 140 | D2580 | SHEET 1 OF 8 |
| APPROVED | 140 | TITLE | SCALE |
| DE APPR. | 140 | 205 SKIDTUBE ASSEMBLY | NTS |
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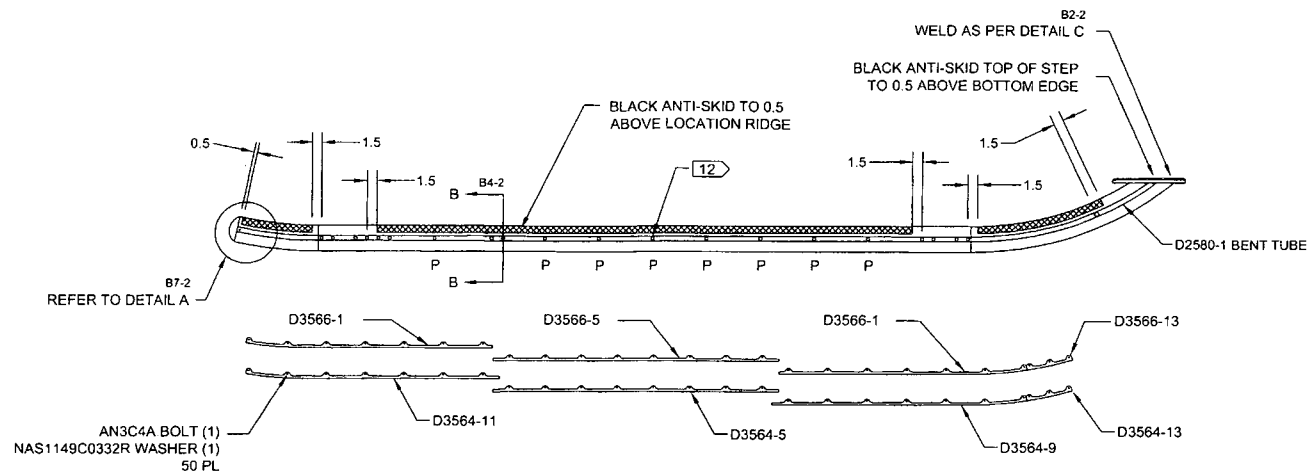
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

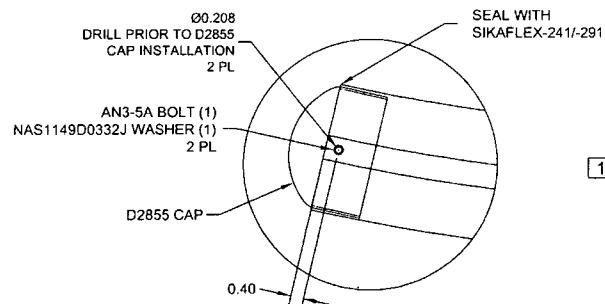
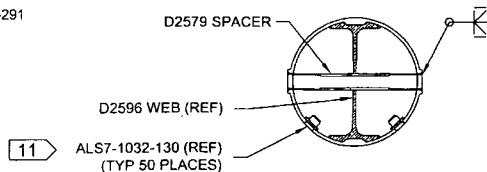
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NOTE: Date & initial all entries

77680

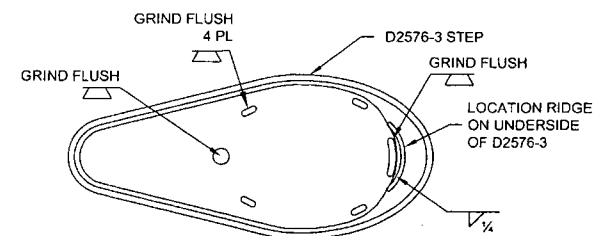


D2580-041 ASSEMBLY DETAIL

DETAIL A C7-2
SCALE 5XSECTION B-B D5-2
SCALE 5X

AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

DETAIL C D3-2
SCALE 5X

| | | | |
|------------|----------|--|--------------|
| DESIGN | 4 | DART AEROSPACE LTD | |
| DRAWN | RF | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | 140 | DRAWING NO. | REV. E |
| MFG. APPR. | 140 | D2580 | SHEET 2 OF 8 |
| APPROVED | 140 | TITLE | SCALE |
| DE APPR. | 140 | 205 SKIDTUBE ASSEMBLY | NTS |
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DEO ATTACHED

RELEASED
2011-08-29

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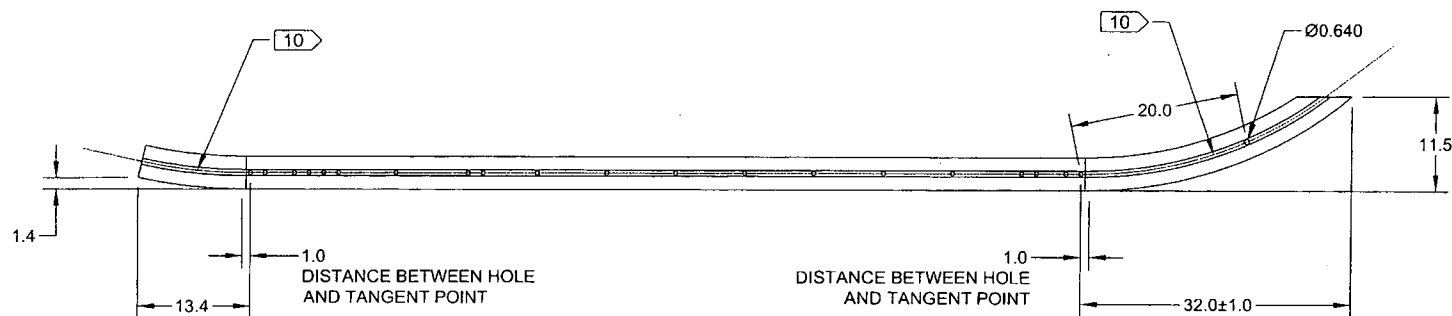
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NOTE: Date & initial all entries

77680



D2580-1 BENT TUBE
(MAKE FROM D2580-101 TUBE)

DEO ATTACHED

RELEASED
2011-08-28
JW

| | | | |
|--|----------|--|--------------|
| DESIGN | # | DART AEROSPACE LTD | |
| DRAWN | RF | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | 10 | DRAWING NO. | REV. E |
| MFG. APPR. | 10 | D2580 | SHEET 3 OF 8 |
| APPROVED | 10 | TITLE | SCALE |
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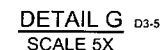
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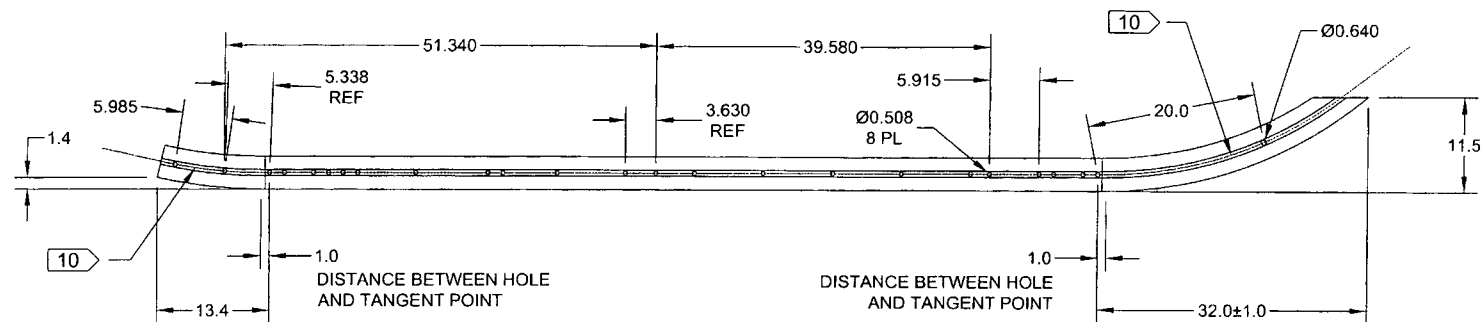
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77680



D2580-5 BENT TUBE
(MAKE FROM D2580-101 TUBE)

DEO ATTACHED

RELEASED
2011-08-29

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|------------|----------|--|--------------|
| DESIGN | # | DART AEROSPACE LTD | |
| DRAWN | RF | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | AP | DRAWING NO. | REV. E |
| MFG. APPR. | AS | D2580 | SHEET 5 OF 8 |
| APPROVED | AP | TITLE | SCALE |
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| DRAWN | RF | | | |
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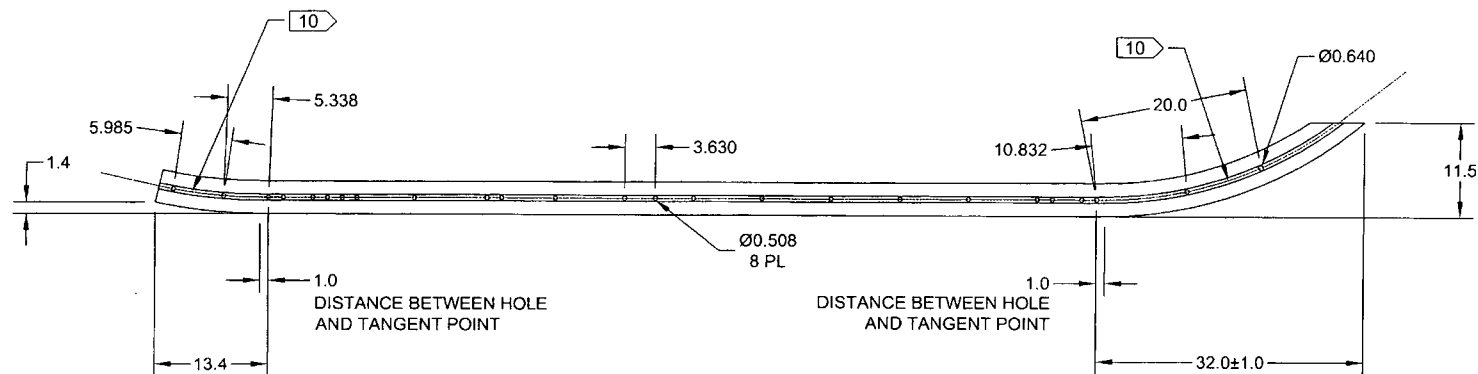
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

77680



D2580-7 BENT TUBE
(MAKE FROM D2580-101 TUBE)



DEO ATTACHED

RELEASED
2011-08-29

| | | | |
|------------|----------|--|--------------|
| DESIGN | RF | DART AEROSPACE LTD | |
| DRAWN | RF | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | 140 | DRAWING NO. | REV. E |
| MFG. APPR. | 140 | D2580 | SHEET 7 OF 8 |
| APPROVED | 140 | TITLE | SCALE |
| DE APPR. | 140 | 205 SKIDTUBE ASSEMBLY | NTS |
| DATE | 11.06.21 | COPYRIGHT © 1996 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. | |

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

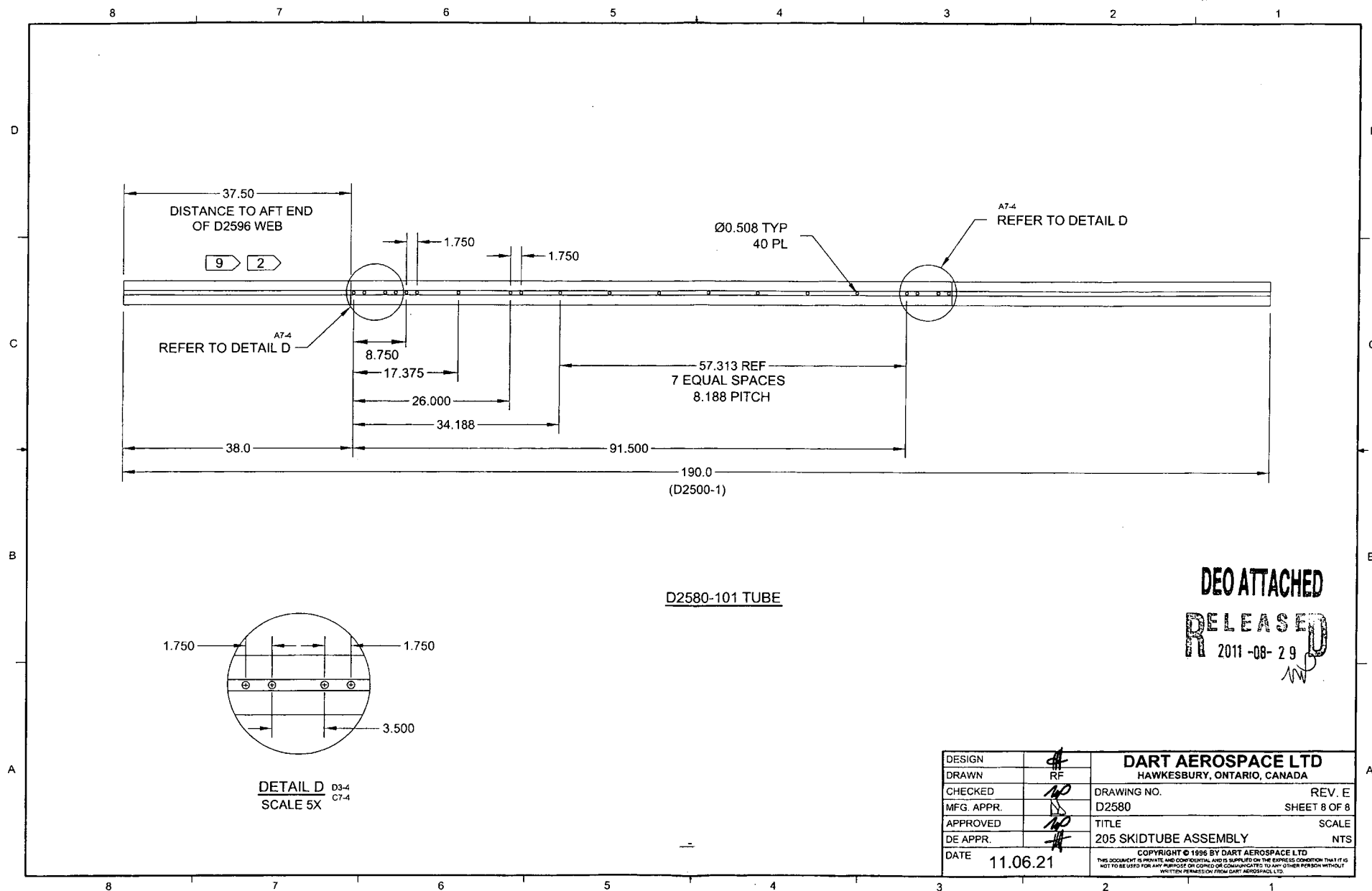
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

77680



DEO ATTACHED
RELEASED
R 2011-08-29

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

77680

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|----------------------|--------------------------------|-------------------------|---|--------------------------------|---------------------------|--------------|
| DRAWING NO. D2580 | TITLE 205 SKIDTUBE ASSEMBLY | REV. E | DART AEROSPACE LTD ENGINEERING ORDER | D.E.O. NO. D2580-E-1 | SHEET NO. SHEET 1 OF 1 | SCALE NTS |
| DRAWN <i>UP</i> | CHECKED <i>ASS</i> | MFG. APPR. <i>ER</i> | APPROVED <i>[Signature]</i> | DE APPR. <i>[Signature]</i> | | |
| DATE 11.12.13 | DATE 11.12.13 | DATE 11.12.13 | DATE 11.12.13 | DATE 11.12.13 | | |

PURPOSE:

CHANGE ALL C'BORED WELDED CROSSBOLT SPACERS TO SWAGED SPACERS

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

WAS

| QTY | QTY | QTY | PART NUMBER | DESCRIPTION |
|------|------|------|-------------|-------------------|
| -041 | -045 | -047 | | |
| 20 | 24 | 25 | D2579 | CROSS BOLT SPACER |

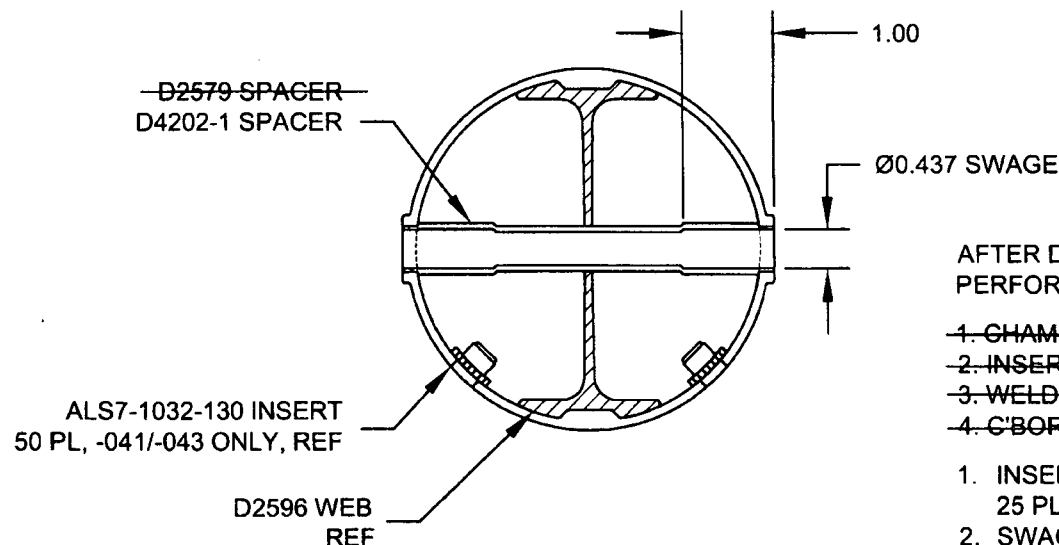
IS

| | | | | |
|----|----|----|---------|-------------------|
| | 4 | | * D2579 | CROSS BOLT SPACER |
| 20 | 20 | 25 | D4202-1 | SPACER |

SECTION B-B, SECTION F-F, & SECTION I-I ARE AMENDED AS FOLLOWS
FOR ALL HOLES THAT WERE ORIGINALLY C'BORED:

*** FOR -045 SKIDTUBE ONLY:**
WELD 4X D2579 SPACERS PER DWG
IN LOCATIONS MARKED "NO C'BORE".
REF SHEET 4 OF DWG.

RELEASED
2011-12-14 *[Signature]*



AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

1. INSERT D4202-1 SPACER, 20 PL (-041) OR 20 PL (-045) OR 25 PL (-047)
2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002
3. TRIM / GRIND FLUSH PER QSI 002

SECTION B-B, F-F, I-I
NOT TO SCALE

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries